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ENTOMOLOGIST CRAW IS READY TO WAR ON PESTS

Board of Agriculture and Forestry Adopts Supt. Hosmer's Recommendations for Hilo Forest Reserve and Honoum Homesteads.

Hilo district's proposed forest reserve
formed the principal element of discus-
sion and action at the meeting yesterday
of the Board of Agriculture, while Mr.
Alexander Craw, the eminent entomolo-
gist who came from California on the
Alameda and is now attached to the
staff of experts of the Board, was formally introduced.

Mr. Craw will be provided with an
assistant entomologist from the coast,
a Mr. Getinski, who is familiar with
fruits and plants in the Islands.

WOULD CULTIVATE ORANGES.

Mr. Craw called the attention of the
Board to the manner in which imported
fruits and plants are disinfected at present,
which, in his opinion, was unwise.
Such fruits and plants are now brought
from ships to the Government Nursery
for treatment. He thought that this
would assist in spreading bugs and in-
sects, by their being dropped in the
streets on the way. He advised having
a disinfecting apparatus erected some-
where on the waterfront. The matter
was referred to Mr. Giffard and Mr.
Holloway with power to act. Mr. Craw
also called attention to the orange in-
dustry as being a profitable one and
hoped to see it developed in the Is-
lands. He had learned from Mr. Austin
of the bureau that \$24,000 had been
spent since January in the importation
of oranges from the coast. This could
be saved if islanders would carefully
study the cultivation of the fruit. Mr.
Craw's attention was called to the fact
that the orange industry in years gone
by was beginning to be a thriving one
when an insect laid it low. He stated that
he would look thoroughly into the mat-
ter and endeavor to study a way out
of the difficulty. Mr. Craw is an expert
horticulturist and has made a special
study of orange cultivation.

PREYING ON LEAF HOPPER.

It was reported to the Board that
Messrs. Koebele and Perkins, the ento-
mological experts now in Australia, had
sent to the Board sometime ago a pa-
rasete in the shape of a lady bird, to prey
on the leaf hopper. This had been propa-
gated and released both in Honolulu
and on Oahu Plantation, where the re-
sults have already been beneficial. The
Planters' Experiment Station is also
making use of the parasite.

DEATH DEALING FUNGUS.

Entomologist Craw, in speaking of the
Board's action in keeping out fruits
from all Pacific countries, to prevent an
invasion of new insects, felt that the
more drastic the action the more pro-
fitable it would be for the islands, and
it would also undoubtedly stimulate in-
terest in fruit growing industries.

Mr. Giffard stated that at a certain
ranch on this island a number of peach
trees imported from Florida had been
dying rapidly of late, and in seeking for
the cause, it was found that a fungus
had attached itself to the roots, prevent-
ing them from spreading and thereby
killing the tree. This has extended to
an old Hawaiian peach tree which had
borne well for the past fifteen years
and this was in a dying condition. It
was believed this fungus growth was in-
troduced in days when inspection was
not so rigid as at present.
It was also shown that there is need
of entomological attention to the al-
ligator pear trees. These had been at-
tacked by borers and a fruit industry
which bid fair to become a thriving one
had been retarded.

A letter was read from Jared G.
Smith, Director of the U. S. Experiment
Station in Hawaii, in which he stated
that a press bulletin on the cultivation
of citrus fruits in the islands was being

prepared by the station horticulturist,
J. E. Higgins.

FORESTATION MATTERS.

The Hilo forestry reserve and home-
steading propositions were embodied in
several special reports and resolutions
HOMESTEADS AND FORESTRY.

The report of Committee on Forestry
concerning forestry reserve in Hilo, and
on proposed homesteads at Honoum,
was submitted as follows:

Honolulu, August 16, 1904.
To the Board of Agriculture and For-
estry.

Gentlemen: Your Committee on For-
estry have had under consideration the
subject of a permanent forestry reserve
line in the Hilo district, and also the
petition of certain persons for home-
steading certain government land in
Honoum, Hilo, Hawaii, now in forest.
The members of the committee are
personally familiar with the general
conditions existing in the Hilo district
and the Superintendent of Forestry has
visited and examined the localities in
question, in detail, and presented to
the committee full reports and recom-
mendations.

These reports accompanying this re-
port, and we recommend their adop-
tion.

In brief, the report of the Superin-
tendent of Forestry is in favor of es-
tablishing a forest reserve line at ap-
proximately the 1750 foot level above
the sea, varying to meet local condi-
tions, as set forth in detail in his re-
port. All above this line to be made
a forestry reserve under the law of
1903. The upper boundary to be fixed
later.

As to the Honoum homestead propo-
sition, your committee is in doubt as
to whether the establishment of home-
steads in this locality is economically
practicable or not. The land is over
three miles from the government road.
The only road to it is a dirt one con-
structed by the Honoum plantation.
In the normal rainy weather of Hilo
teaming is impracticable over such
roads, and packing on animals is diffi-
cult and expensive. A macadamized
road only is of use. This is costly to
construct, and by reason of the steep
grades, costly to keep in repair.

The available road funds have here-
tofore been scarcely sufficient to keep
the one main road through the district
in repair. It is questionable
whether under existing financial condi-
tions a macadamized road can be
built or kept in repair, if built. A fur-
ther consideration is, that the Hilo dis-
trict is cut at such frequent intervals
by ravines of such extreme depth that
it is impracticable to build an upper
road above the plantations and paral-
lel to the coast, as has been done in
Kona.

A separate road must be built ma-
ka on every ridge, or approximately
every half mile or so. By reason of
this fact the area opened by each road
would be comparatively small—so small
as not warrant the cost of the road.

There are questions, which to some
extent, lap over into the consideration
which this board must give every propo-
sition to take forest land for home-
steading purposes. The main points up-
on which the committee bases its ap-
proval of the homesteading of this
land, and, second, that deforestation
under the restrictions recommended by
the superintendent, will not radically
injure the purposes for which the forest
reserve is sought to be establish-
ed. The board is not the responsible
authority to decide upon the econom-
ical availability of the land for home-
steads, or concerning roads to get to
them. That rests with the land de-
partment and the legislature. The sole
scope of this report is therefore, that
so far as this board is concerned, it
does not object to utilization of the
land in question for homestead pur-
poses.

Respectfully submitted,
L. A. THURSTON,
A. W. CARTER,
W. M. GIFFARD.

SUPERINTENDENT HOSMER'S RE-
PORT ON HILO FOREST RE-
SERVE.

August 9th, 1904.
I have the honor to submit herewith
a report with recommendations on the
proposed forest reserve, in the Hilo dis-
trict, on the Island of Hawaii.
This report deals with the lower line
of the proposed reserve and is the re-

sult of a visit to the district, covering
the period from July 5th to July 23rd,
1904. During that time I personally
went over the ground, following as
closely as possible the lower edge of
the existing forest, from the Laupa-
hoehoe gulch to the 1881 lava flow,
back of Hilo town. The examination
was made in company with the man-
agers of the several sugar plantations
along the way; each manager accom-
panying me over his own land. Other
gentlemen, also, were interviewed and
much information in regard to local
conditions, throughout the district, was
obtained.

PRIMARY OBJECT OF HILO RE- SERVE.

The reserve in the Hilo district is
needed primarily to protect the head-
waters of the streams, which play so
important a part in the success of the
various plantations. From Laupa-
hoehoe to Hilo are many running streams,
which thanks to the heavy and nearly
continuous rainfall in the forests above,
may be regarded as permanent, al-
though of course subject to fluctuation.
On these streams the plantations de-
pend for water with which to flume
their cane to the mill. Their impor-
tance is consequently very great and
the necessity of safeguarding them is
apparent.

From its location of topography, the
Hilo district is fortunately situated to
receive an ample supply of water. The
trade winds bring the moisture laden
clouds and pile them up against the
slope of Mauna Kea, in a great bank,
from which the precipitation is heavy
and very nearly continuous. This cloud
stratum covers a belt, extending from
an elevation of approximately 2000 feet
to one of about 6000 feet; these limits
of course varying on different days and
with the slight changes in the direc-
tion of the trade winds. The lower
edge probably fluctuates more than the
upper, as the cloud mass frequently
creeps down the slope, causing heavy
precipitation as far as the sea. But
the greater part of the moisture from
the clouds is dropped higher up—some-
where between the elevations of 2500
and 4000 feet.

The precipitation is heaviest at the
eastern end of the district and gradu-
ally diminishes to the westward, until
in the Hamakua district, permanently
running streams are no longer found.
The Hilo-Hamakua boundary is in this
way a natural as well as an artificial
line. The reason for this change of
conditions is that beyond the northern
end of the Hilo district, the bulk of
Mauna Kea no longer stands in the
path of the trade winds, which accord-
ingly go over the shoulder of the
mountain carrying their clouds to the
lands beyond.

From quite another cause the 1881
lava flow marks the limit of flowing
streams to the eastward, for beyond
this point toward Puna, the porous
character of the rock and soil allows
all the water to sink immediately into
the ground, to appear again only near
the coast.

At the western end of the Hilo dis-
trict, the land rises much more ab-
ruptly from the sea than at the east-
ern—the same elevation being reached
about four miles back of Laupa-
hoehoe, which, back of Hilo, lies ten miles from
the shore.

OBJECT SOLELY CONSERVATION.

Whatever may be the influence of
the forest on the precipitation else-
where in the islands, the question in
the Hilo district is solely one of con-
servation and utilization of the water,
which reaches the ground. There is
naturally great fluctuation in the size
of the streams, and during times of
drought, the beds of many of them
are almost, if not entirely, dry. The
presence of the forest tends to regulate
and maintain the flow, and to make
available for later use, the water which
would quickly run away from denuded
slopes.

While the heaviest precipitation, as
has been said, occurs somewhere above
the 2000 foot contour line, the bene-
ficial effect of the forest extends much
lower down the slope. But after a time,
other factors come into the case, mak-
ing it necessary to establish a limit
above which the land should remain
in forest and below which it may be
cleared for the various industries, with-
out detriment to the general welfare
of all concerned.

POINTS TO BE CONSIDERED.

In deciding upon the location of the
lines of a permanent forest reserve it
is necessary to consider future as well
as present needs. A number of con-
siderations have thus to be taken into
account, among which are the benefits
to be derived and the uses to which
the land would be put if cleared. The
former have already been discussed.
Of the latter, in the Hilo district there
are practically only two; the further
extension of the cane fields and the
opening of tracts for settlement.

At present, with the exception of
what is raised on the homestead clear-
ings, cane is the only crop grown sys-
tematically at the higher elevations.
The upper line of the cane fields varies
with each plantation. At the western
end of the district, owing to the steep-
er grade, the cane runs up to about
1800 feet. On the plantations in the
center of the district the highest cane
ranges from 1300 to 1600 feet. While
back of Hilo on the more gently sloping
lands of Kaunama and Pihouua

it runs up to 1800 and 2000 feet. The
following table compiled from aneroid
measurements, checked in part by
known elevations, gives approximately
the highest points on each plantation
in the districts. These points are, as
well, the lower edge of the existing
forest.

ELEVATIONS OF THE HIGHEST CANE-FIELDS, HILO DISTRICT, HAWAII.

Plantation.	Approximate Elevation Feet
Laupaohoe	1800
Hakalau	1500
Honoum	1400
Pepeekeo	1600
Onomea	1500
Hilo Sugar Company—	
Fee lands	1500
Homestead lands	1800
Hawaiian Mill Company	2000

LIMITS OF CANE CULTIVATION.

The elevation at which the highest
cane now stands practically marks in
each case the limit of profitable cultiva-
tion under present prices and condi-
tions. Some of the managers express
the opinion that with a higher price for
sugar it will pay to go farther up, while
others felt that the full limit had, for
them, already been reached. Most of
the managers however wanted a strip
left above their present fields, on their
fee land, so that if later it were found
advisable to extend the cane further
mauka, there would be room to do so.
Seventeen hundred and fifty feet was
considered by all of them as being suf-
ficiently high, and this elevation was
agreed to by practically all as the best
line for the permanent forest boundary.

The other main factor in the case is
the demand for land for settlement and
homestead purposes which will inevita-
bly follow the development of the Is-
land of Hawaii, through the building
of the projected Kohala-Hilo railroad
and the improvement of Hilo Harbor,
both of which must eventually come.
Indeed, because of its location and nat-
ural advantages, there are already ap-
plicants for all the land now available
in the Hilo District.

RECOMMENDATIONS BY FOREST- ER ROSS.

As a basis on which to work in de-
termining the location of the line, the
report to Ex-Governor Dole, made by
Mr. George Ross, consulting forester for
the North Hilo District, was used. In
this report, which embodied the con-
census of opinion of the managers of
the various plantations in the district,
it is recommended that the lower bound-
ary of the reserve be drawn approxi-
mately on the seventeen hundred and
fifty foot contour line. In this recom-
mendation I am ready, on the whole,
to concur, because I believe that a line
so drawn would sufficiently protect the
forest and safeguard the water supply
of the district, while at the same time
making available all the land which it
can reasonably be expected will be
utilized within a considerable period
of years.

RESERVE LINE RECOMMENDED.

In the absence of a good topographic
map, it is difficult to discuss the loca-
tion of this line except in a general
way. For this reason the seventeen
hundred and fifty foot contour has
been adopted, although the line as ac-
tually laid out will vary more or less
from it. At either end of the district,
owing to the fact that the land has
already been cleared, or partitioned off
into homestead tracts, it will be nec-
essary to go somewhat higher. When
the time comes for running the line
out on the ground it should be drawn
between prominent points—such as
hills, junctions of ridges or ravines, pro-
nounced angles in streams, etc.—and
such points should be permanently
marked.

Based upon the topographic data now
in hand, I therefore recommend as the
lower boundary of the proposed forest
reserve in the Hilo District, the fol-
lowing line: Starting at the Laupa-
hoehoe Gulch at the mauka Hamakua
corner of the Laupaohoe homestead
tract, and following the upper bound-
ary of the same to its eastern mauka
corner, thence across to, and along the
upper boundary of the Maulua home-
stead tract, thence to the top of the
Kamae tract, thence across the lands
of Hakalau and Kaiwili to the upper
line of the proposed Honoum homestead
tracts, as recommended in my report
upon that land; thence through the ma-
uka corners of the lands of Kawaluu
and Puunui to the upper corner of the
land of Kikala, on the boundary of the
Kaiwili homesteads; thence from the
eastern boundary of this tract, at about
the same elevation, the line should cross
to the Awehi stream, above the cane
fields of the Hilo Sugar Company; and
thence across the land of Pihouua,
around the top of the existing cane, to
the 1881 lava flow.

Such a line would, I believe, meet the
requirements of future growth and be
above practically all the land best
suited for agriculture.

THE LAND ABOVE THE RESERVE LINE.

Above seventeen hundred feet the
land rises more steeply than at lower
elevations and the soil is thinner. This
fact combined with the greater rainfall
and the consequently greater erosion
makes these upper lands less desirable
for agriculture. Furthermore, as many
of the gulches split up at this elevation
into ravines and gullies, the fields in
(Continued on Page 6.)

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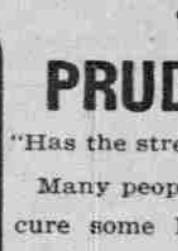
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